

THE
A R T
O F
PAINTING in O I L.

Wherein is included

Each particular Circumstance relating to that Art and Mystery : Containing the best and most approved Rules for Preparing, Mixing, and Working of Oil Colours.

The whole Treatise being so full, compleat, and so exactly fitted to the meanest Capacity, that all Persons whatsoever, may be able, by these Directions, to paint in Oil-Colours, all Manner of Timber-Work ; such as Posts, Pales, Palisadoes, Gates, Doors, or any thing else that requires either Use, Beauty, or Preservation from the Violence or Injury of the Weather.

In which are also particularly laid down all the several Circumstances required in Painting of Sun-Dials, Printed-Pictures, Sash-Windows, &c. in Oily-Colours.

The Sixth Edition, with some Alterations, and many Matters added, which are not to be found in the former Editions.

To which added, The whole Art and Mystery of Colouring Maps, and other Prints, with Water-Colours.

By JOHN SMITH, C. M.

L O N D O N :

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THE ART OF PAINTING

To the READER.

READER,



THE several Impressions of this Work having given very good Satisfaction to many ingenious Persons that were desirous of some Instructions in this Matter, and the Books being all sold off, and a new Impression intended, I was desired to take some Pains to view and correct the Work, and to add such Things as were found wanting, to make it compleat; which I hope I have done to the Satisfaction of all that shall peruse this last Edition, there being not wanting in it, any one particular Circumstance that is requisite to a Work of this Nature.

I suppose no Man will judge, that this Book is designed any ways to instruct those that are professed Painters, whose Knowledge in these Affairs must be supposed to out-strip these first Rudiments of their own Profession; no, the chief Design of this Work is, only in order to instruct

To the READER.

such ingenious Persons as are desirous of some Insight into the Nature of Working in Oil-Colours.

Besides this, the Gentry themselves, that live far remote from great Cities, where Painters usually reside, may sometimes have Occasion to play the good Husband, in preserving such Ornaments of their Habitations as are most exposed to the Violence of Rain and Wet ; there being less Trouble in preserving that already made, than in making new. When a Gentleman therefore has been at the Charge in fitting his Habitation with good Doors and Gates, has fenced it about with Pales, and adorned his Gardens with Borders and Palisadoes, Seats and Arbours to rest in, and such like ; it is easy for any of his Servants, by the Directions here given, to be able to colour over and paint any of these, or any other Kinds of Timber-Work in Oil-Colours.

In Painting of Sun-Dials, I have been very particular, for this Reason, that there being many Books extant, that teach the Way of drawing Dials, and many Gentlemen are very expert in them, but yet few or none are able to paint their Dial
on

To the READER.

on the Plane, when they have drawn the Draught ; therefore, I thought it not Time ill-spent, to set down the several material Particulars relating to that Work ; not doubting but all Persons, that are Lovers of Art, will add this Piece to that Part of their Library that relates to Dialling.

In the whole Work, I have been careful to relate only Matter of Fact, and set down only such Rules and Observations, as by infallible Experiments myself have found true, avoiding, altogether, Things speculative, or what is only known by Hear-say ; and, therefore, as to all the Particulars of it, the Reader may rely upon them as true and certain. The Stile, I confess is mechanic and plain, but I consider, that Discourses of this Nature require not Eloquence to persuade or entice the Reader ; Knowledge being best communicated by clear and significant Expressions ; and in this I have done my Endeavour ; and for the rest, if any shall take Exception, I have this only to say, that my Aim in it has been more for the Profit and Pleasure of others, than my own Advantage.

To the READER.

To conclude therefore, good Reader, if it shall be found, that this Piece is entertained in the World with any kind Acceptation, I do promise my Endeavour farther to communicate to the same, some Hundreds of particular Experiments, of great Use and Advantage to most Sorts of People, and such as relate to almost every particular Circumstance of human Life; all of them related with the greatest Faithfulness, Care, and Plainness that each Particular is capable of. In the mean time, let us all be so far careful in our own Affairs, that while we strive to excel others in Knowledge, we fall not short of them in Virtue and a good Life: The End of all Science tends chiefly to a temporal Satisfaction; but he that adds Virtue to his Knowledge, adds to the Felicities of this World, the Glories of the next.

Farewell.

J. S. C. M.

T H E



THE
CONTENTS
OF THE
SEVERAL CHAPTERS.

Chap. I. <i>A</i> N Account of the several Tools, or manual Utensils, that are used in the Art of Vulgar Painting	Page 1
Chap. II. A Catalogue of the several Colours used in Painting with Oil; their Nature and Way of making	14
Chap. III. Of the Burning of Colours, or Preparing of them that require to be so used	30
Chap. IV. How to wash such Colours as, for their Grittiness, are not otherwise to be made fine enough for certain Uses	32
Chap. V. How to grind Colours with Oil	34
Chap. VI. How to order Colours for Working, after they are ground	36
Chap. VII. How to make a Size for the Gilding both with Gold and Silver	42
Chap. VIII. The Practice of Working Oil-Colours, and Painting of Timber-Work, after the manner of Vulgar Painting	44
Chap. IX. What Colours are most suitable, and set off best one with another	49

The C O N T E N T S.

Chap. X. Of Painting Sun-Dials, and first, of the Planes on which Dials are to be drawn	Page 53
Chap. XI. How to make the best Glue for gluing the Joints of Dial-Boards	57
Chap. XII. What Colours are requisite for the Painting of a Sun-Dial	59
Chap. XIII. The Practice of Painting Sun- Dials	61
Chap. XIV. How to gild with Gold on an Oily- Size, either Letters or Figures, &c.	66
Chap. XV. The Way of Painting a Blue with Smalt, the only Colours that require Strow- ing	71
Chap. XVI. How to scour, refresh, and preserve all Manner of Oil-Paintings	74
Chap. XVII. An Experiment of very near Affinity to Oil-Painting, but of great Use to Travel- lers of some Kinds, to the chief Officers of Camps and Armies, Seamen, and such like	79
Chap. XVIII. How to preserve all bright Iron- Work from Rust, and other Injuries of a moist and corroding Air, by an Oily-Varnish	83
Chap. XIX. The Art of Back-Painting Metzo- tinto Prints, with Oil-Colours	85
Chap. XX. The Manner of Painting Cloth, or Sarsnet-Sash-Windows	92
Chap. XXI. The whole Art and Mystery of Co- louring Maps, and other Prints, with Water- Colours	95

T H E



THE
ART
OF
PAINTING.

C H A P. I.

An Account of the several Tools, or manual Utensils that are used in the Art of Vulgar Painting.

 **T**HE first is the Grind-Stone and Muller for grinding of Colours. The Stone must be a hard, spotted or rance Marble, of a close Grain, not spongy or full of small Pores ; for if the Grain of the Stone be not close,

2 *The Art of PAINTING.*

but hollow and spongy, the Colours that are first ground 'on it, cannot so well be cleansed off, but that some Part will still remain in these hollow Pores of the Stone, which will much spoil the Beauty and Lustre of those other Colours that are ground after it. This Stone for Grinding ought to be about a Foot and a half square, and so thick, that its Weight may be sufficient to keep it fast and steady, and not apt to be moved when Colours are grinding on it.

2. The Muller is a Pebble-Stone, of the Form of an Egg, the bigger End of which is to be broken off, and with sharp Sand or Emery, it must be ground smooth and flat, on some other hard flat Stone; and the Edges of it must be well rounded off, that the Colours may the better slide under it when it is moved round. This Stone ought to be about two Inches Diameter, or three at most, on the flat End, and about five Inches high, that so you may command it the more easily in the Time of Grinding.

For want of a spotted Marble (which is a Stone of a hazle Colour, compact, of a Number of Kernels, as it were, in the

the Greet of it) you may make use of any Kind of hard Marble, either White or Black; some I have known to use a Slate, such as, in *Sussex*, they cover their Houses with, being in large Pieces, some of which I have seen above two Foot square, and an Inch and a half thick; which Kind of Slates for Vulgar Paintings may serve very well.

When a good-shap'd Stone for a Muller is wanting, a Fragment of any smooth-sided Stone, cemented (with Rosin and Brick-Dust mixed together) into a Piece of Wood of a fit Shape to hold it by, has performed the Work as well as the best Muller in the Shops.

3. To these belong a Voider, being no other than a Lanthorn-Horn, about three Inches one Way, and four the other; this Voider is to clear off the Colours from the Stone when ground, and also to keep them together in the Time of Grinding, when it spreads too much.

For want of this, a smooth Piece of Wood of the same Size, cut thin and made very sharp and even on the Edge, may serve as well.

4 *The Art of PAINTING.*

4. Pots and Pans must also be provided, either of Earth or Tin, of several Sizes, according to the Quantity of Colours to be ground, into which they are still to be put as you grind, till you have ground Colour enough of each sort, as may be necessary about the Work you design them for.

But, in case you design to grind at one Time so much of each Colour as may be sufficient to serve your Occasions a long time together, as some do; then, when you have ground all those quantities of each, as you think fit, let them be put up and tied close in Ox-Bladders, or in the Bladders of Hogs or Sheep, according as your Quantities are; this will preserve them from drying or spoiling, a long Time together.

I remember I had a Parcel of Colours given me in the Year 1661, by a Neighbouring Yeoman, that were, as he said, left at his House by a Trooper, that quartered there in the Time of the Wars, about the Year 1644. This Man was by Profession a Picture-Drawer, and his Colours were all tied up in Bladders, according to the Method before prescribed;

and

The Art of PAINTING. 5

and when I had opened them, I found them in a very good Condition, and, to my Thinking, as fit for Use, when mixed with a little fresh Oil, as if they had been but very lately ground, though they had remained in this Condition about seventeen Years.

5. You must be also provided of Brushes and Pencils of all Sorts and Sizes. Brushes are always made of Hogs Bristles ; they are of several Sizes and Shapes, some round, and others flat ; the round ones are of all Sizes, from two Inches Diameter to a Quarter of an Inch ; those of the largest Size are for Priming the Work, and for laying such Colours as are used in great Quantities, and in Colouring over the Superficies of all large Work ; such as Posts, Pales, Wainscot, or such like : The smaller Sort of Brushes are to use in such Parts and Places of any Work, as larger ones cannot well come to work in.

Flat Brushes are chiefly in Use for Drawing of Lines, and in the Imitation of Olive and Walnut-Work.

6. As for Pencils, they are compounded of a finer and smaller Hair : These also

6 *The Art of PAINTING.*

also are of several Sizes, but all generally round, being for the most part fitted into Swans, Geese, or Ducks Quills, and from thence are termed Swans-Quill, fitch'd or pointed, Goose-Quills, fitch'd and pointed, Ducks-Quills, fitch'd and pointed. Besides these, there are a larger Sort of Pencils in Tin Cases, and some in Stocks, like Brushes, all made of the fine Hair.

In the Choice of Brushes and Pencils, observe these Rules: For Brushes, observe whether the Bristles are fast bound in the Stocks, and the Hair strong and lie close together; for if they don't lie close but sprawl abroad, such will never work well; if they are not fast bound in the Stock, the Bristles will come out when you are using them, and spoil your Work; for such I have seen, where the loose Hairs, from the Brush, have lain buried up and down in the Colours laid on, to the great Disparagement of the Work: To prevent this, if they are not fast bound, drive in some thin Wooden Wedges between the Thread, with which they are bound round; and by thus doing, the Bristles will be made tight and secure.

The Art of PAINTING. 7

In choosing of Pencils, especially the pointed ones, do thus; put them into your Mouth, and moisten them a little, then draw them forth between the Tongue and the Lip, and if they come out with an intire sharp Point, without cleaving in twain, they are good; provided, also, they be thick and full set next the Quill, and also fast bound; if they be thin and lean next the Quill, they never stand well to the Work, nor draw sharp and clever.

To every one of these Cafe, or Quill-Pencils, let a neat Stock be fitted, about nine Inches in Length at the least; for, unless the Pencil be held a good Distance from the Hand, you shall never be able to command it well, nor work so neat, as when you have the true Command of a Pencil, held thus at a large Distance, your Hand being supported, as is usual, by a Ruler, or finall Walking-Stick; one End of which you must hold in your Left-hand, and the other must rest on the Work, but yet so as not to do it any Injury.

7. If you have, at any Time, Occasion to gild with Leaf-Gold, on an Oily-Size, accord-

8 *The Art of PAINTING.*

according to the usual Practice of Painters, there do then belong to this Work several distinct manual Tools : As, first, a Cushion, upon which the Leaves of Gold must be laid, when they are to be cut into such Forms as fit the Work you are to gild. This Gilding-Cushion is generally made of a smooth-grained Bazil-Skin, the Flesh-Side outward ; this is to be nailed to the Edges of a square wooden Bottom, about six Inches square, and then well stuff'd out with Cotton or Wool, very hard, plain, and flattish. Upon this Gilding-Cushion the Gold Leaves are to be laid, when you would cut them into such Scantlings as will best fit the Work you design to gild.

8. The Instrument you make use of to cut the Leaves, must be either a sharp smooth-edg'd Case-Knife, or else a Slip of the hollow Spanish-Cane, cut up to a smooth and sharp Edge with a good Pen-Knife ; this Cane-Knife is counted the best, because, if well made, it will not only be very sharp, but also cut the Gold Leaf more naturally than any other ; for a Steel-Knife, though it cut very well, yet the Gold will stick to it, and so

so give you much Trouble to part the Leaf from it, except you are careful to keep the Edge very dry, by continually wiping of it with a clean and dry Cloth ; whereas a Cane-Knife will put you to no such Trouble in the Use of it, its Substance being of such a Nature, as not to retain any viscous or clammy Matter, capable of making the Gold stick to it.

9. When by the Use of these you have cut out the Leaves of Gold into proper Scantlings, it must then be taken from off the Cushion, and laid down upon the Work you are to gild ; to perform which, if the Work be flat and plain, you must use the Gilding-Pallet ; 'tis only a flat Piece of Wood about three Inches long, and an Inch broad, upon which is to be glued a Piece of fine Woollen-Cloth of the same Length and Breadth : Upon this Pallet do but breathe with your breath, that the Cloth may be made a little moist by it ; then if you clap it down gently on the Gold that is cut out, it will stick to the Pallet, and may from thence be readily conveyed to the Work you are to gild, and laid down on it ; but this kind of Tool is only

10 *The Art of PAINTING.*

only for flat and plain Work, in which Case, if you are to cover any large Quantity of Work, your Pallet may be as large as the whole Leaf of Gold, and so you may transfer them from the Book to the Work, without farther Trouble of cutting into smaller Parts.

10. But, if it be any hollow or carved Work that is to be gilt, then Painters do usually take up their Gold, either from the Book or Cushion, with a Bunch of Cotton-Yarn, a little moistened with their Breath ; for Cotton is a Material very apt and fit to press into the Hallowness of the Work, with the Gold upon it ; in case you want Cotton, a Bunch of good fine Wool may do as well.

But, if this Gold be to be laid on within the Hollows of Carved-Work, then you must use a fine Camels-Hair Pencil, of such a Size as is suitable ; this, when moistened by breathing on it, will take up your Leaf-Gold, and by the Help thereof the Gold may be laid in any hollow Work.

Black-Lead Pencils are of so great Use in Drawing, in some Cases, that a Painter can very ill want them ; as also good Chalk,

The Art of PAINTING. II

Chalk. The Chalk must be such as is of a soft Grain, that will easily spend itself on the Work you draw upon ; if the Chalk be of a hard stony Nature, it will spoil whatever you draw upon, for you must press so hard to make it spend itself, that the Work will be full of deep Races, not to be after obliterated ; a great Damage to the Beauty of the Work.

II. For Black-Lead Pencils ; those that are right good, are not easy to be gotten ; therefore, that you may not be deceived in the Choice of them, take Notice, that the best Black-Lead Pencil, is that that spends its Colour freely, and draws Black with an easy and light Stroke : The Goodness of the Lead may also be known by the Grain of it ; the best Lead, if you shave off a little of it with a sharp Knife, will appear smooth and shining as Glass, not hollow or spongy ; that Lead that, when cut, appears not with a good Gloss, is of a dull Colour, and of a hollow spongy Grain, is of little or no Value, for the Grain is so hard, it will never spend Black, nor draw free.

Besides

12 *The Art of PAINTING.*

Besides this, the common Pencils of the Shops are made up so deceitfully, that they are not good Lead half Way up the Stock ; the best Way therefore, is to buy Black-Lead in the Lump at the Colour-Shop, and with a fine Spring-Saw, cut it into Scantlings of the Bigness of a Quill, into which you may fit it ; and having fastened it in with Glue, it will be found much better and cheaper, than to buy them at the Shops.

12. Besides all these before-mentioned, there will be required, as necessary for Painting, Brass-Compasses, for setting out and proportioning your Work ; they also assist you much in Drawing all Figures that have a Circular-Form : There is Need also of Rulers of several Lengths ; as also Squares, Crucibles to burn Colours, and Bladders for Oil.

The Value of such of the fore-mentioned Particulars as are to be bought ready fitted.

A Marble-Stone for Grinding, according to its Size and Bulk, will cost from half a Crown to five Shillings the Stone.

A

The Art of PAINTING. 13

A Muller will cost Eighteen-Pence, or two Shillings.

The largest Brushes will cost Six-Pence a-piece, the other Sizes from Four-Pence to one Penny a-piece.

The largest Sort of Pencils made with fine Hair, either in Tin-Cases, or in Wooden-Stocks, from Eight-Pence to Two-Pence a-piece; those inclosed in Swans-Quills, a Penny a-piece; and others in Goose or Ducks-Quills are Six-pence a Dozen, one with another, or a Half-penny a-piece.

Black-Lead Pencils, the best in Cedar-cases, will cost Three-Pence a-piece; but an Ounce of the finest Black-Lead in the Lump, cut out as before directed, will do as much Service as any six Pencils; which Ounce of Lead will cost you about Six-Pence, if it be prime good.

Brass-Compasses are from Eighteen-Pence to six Shillings a Pair, according to their Size and Goodness; a Pair about eight Inches in the Shank will cost about two Shillings six Pence; a Pair of the same Size made with three Points, viz. a Steel-Point, a Pen-Point, and a Black-Lead Point, will cost you, if well made, six Shillings.

Cru-

14 *The Art of PAINTING.*

Crucibles will cost you about two Pence a-piece, if they are large ; the other Sizes are a Penny a-piece, and the smalleſt a Half-Penny.

Note, That Grinding-Stone and Muller, and all Kind of Pencils, are to be had at the Colour-Shops ; Brass-Compasses and Squares at the Mathematical-Instrument Makers ; and Crucibles you shall find plentiful at the Iron-Mongers in *Foster-Lane*.

C H A P. II.

A Catalogue of the several Colours used in Painting with Oil ; their Nature and Way of Making.

W H I T E S.

THE Principles of all Whites is the White-Lead ; this Colour owes its Original to the common Plummers Lead, of which it only is made ; the Manner is thus : At *Venice*, where the greatest Quantities were, formerly, only made,

made, they take Sheet-Lead, and having cut it into long and narrow Slips, they make it up into Rolls, yet so as a small Distance remains between every spiral Revolution; these Rolls they put into Earthen-Pots, so ordered, that the Lead may not sink down above half Way or better in them; these Pots have each of them very sharp Vinegar in the Bottom, so full as almost to touch the Lead; when the Vinegar and Lead are both conveyed into the Pot, 'tis cover'd up close, and so left for a certain Time, in which Space the corrosive Fumes of the Vinegar will reduce the Superficies of the Lead into a white Calx, which they separate by Knocking upon it with a Hammer. A more particular Description of the whole Process, you may find communicated to the Royal-Society, by Sir Philberto Vernatti, and Printed in the *Philosophical Transactions*.

Of this Colour there are two Sorts at the Colour-Shop, the one called Cerus, which is the most pure and clean Part; the other is called by the plain Name of White-Lead: They are Colours that work with very much Ease, and will be ground

as

16 *The Art of PAINTING.*

as fine even as the Oil itself, in comparison, if you will take Time enough in the Grinding; it lies very smooth, and binds very hard, on what Work soever it be laid. If you paint with it any Kind of Timber-Work or Stone, that you would preserve from the Weather, it is best to work it in Linseed-Oil, for that will bind it extreme hard, if you lay it upon the Work very stiff; but, if you use White-Lead alone within Doors, 'tis then best to mix it with drying Nut-Oil; for Linseed-Oil within Doors will turn yellow, and spoil the Beauty of it; which Inconvenience Walnut-Oil made to dry prevents; for that makes it keep a constant Whiteness.

Besides White-Lead and Cerufs, there is another Sort to be met with sometimes at the Colour-Shops, which they call Flake-White, which is by some accounted the best White of all others, but the Reason of that I don't well understand, except it be, because 'tis scarce and dear. This Colour is said to be found only under the Lead of some very old Buildings, where Time has, by the Assistance of some sharp Quality in the Air, thus

thus reduced the undermost Superficies of the Lead in this white Calx, which proves a very good White, but in my Opinion, not exceeding the best Ceruss, which is as white as the other, and a great deal cheaper.

B L A C K S.

L Am-Black : This Colour is no other than a Soot raised from the rosy and fat Parts of Fir-Trees ; it comes mostly from the Northern Countries, as *Sweden* and *Norway* ; 'tis a Black that is more generally used than any other, because of its Plenty and Cheapness, and proves a very good Black for most Uses ; 'tis of so fine a Body, that if tempered only with Linseed-Oil, it will serve to work with, on most common Occasions, without Grinding ; but thus used, 'twill require a long Time to dry, unless you mix much Drying-Oil with it ; or, which is better, some Verdigrease finely ground ; this and the Drying-Oil together will make it dry in a little Time. Some add also Oil of Turpentine ; and without these it will not dry in a long Time ;

B

for

18 *The Art of PAINTING.*

for in the Substance of the Colour is contained a certain greasy Fatness, that is an Enemy to Drying; to remedy which, burning in the Fire till it be red-hot and cease to smoke, will consume that Fatness, and then it will dry much sooner; but when 'tis burnt, it must then of Necessity be ground with the Oil, for else it will not work fine; for the Fire is of that Nature, that 'tis apt to harden most Bodies that pass through it. This Colour is usually made up in small Boxes and Barrels of Deal, of several Sizes, and so brought over to us.

Besides Lam-Black, there is another Sort of Black, called Lamp, or Candle-Black, and this is the Soot of a Lamp or Candle; which I have heard very good Artists commend, as a much better Black for any Use than the Lam-Black, it being of a finer Body and brighter Colour; but, I think, not to he gotten in very great Quantities, and therefore used only in very fine Work.

Ivory-Black is made of the Comb-makers Raspings, and other waste Fragments of Ivory; these are burnt or charred to a black Coal in a Crucible close stoppt

stopt up. This proves a very delicate Black when ground very fine; you have it at the Shops well prepared, and levigated or ground very fine with Water on a Marble-Stone, and then dried in small Lumps; being thus prepared, 'tis the more easily ground in Oil, with which it will lie with as good a Body as most Colours do; but 'tis something dear, and therefore not used in any common Work.

Some use Willow-Charcoal ; this, if ground very fine, does in Oil make a very good Black ; but being not so easy to be gotten as the Lam-Black, 'tis seldom used.

R E D S.

Vermilion is the most delicate of all light Reds, being of itself a perfect Scarlet Colour; 'tis made artificially out of Quicksilver and Brimstone, in the Manner following: Take six Ounces of Brimstone and melt in an Iron-Ladle, then put two Pound of Quicksilver into a Shammy-Leather, or double Linen-Cloth; squeeze it from thence into the

20 *The Art of PAINTING.*

melted Brimstone, stirring them in the mean Time with a wooden Spatula, till they are well united; and when cold, beat the Mass into a Powder, and sub-lime it in a Glafs-Vessel, with a strong Fire, and it will arise into that red Substance which we call Artificial Cinaber, or Vermilion. The whole Proces you may see more at large in *Lemery's Chymistry*. This Colour is of a delicate fine Body, and if Pains be bestowed on it, 'twill grind as fine as the Oil itself; and then it makes a most excellent Colour: But if it be not ground very fine, the Glory of it will not appear, for it will look dull and work coarse; but if it be ground very fine, no Colour in the World looks better, nor works smoother, nor bears a better Body than Vermilion does, nor goes farther.

Lake, especially the richest Sorts, is the best of all dark Reds, being a most pure Crimson; 'tis a Colour that will grind very fine, and lies with a good Body, but there must be good Store of Pains taken with it in the Grinding, for if it be not well and thoroughly ground, its Colour will want much of its Glory;

and

and besides this, 'twill work with some Difficulty, being apt to cling together like a Jelly; so that 'twill be apt to cling up together, after 'tis laid on, just as you see warm Water does upon a greasy Trencher, when 'tis washed in it; to prevent which, grind it well, and temper it as stiff as you can well work it. Of this Colour there be divers Sorts at the Colour-Shops, very different, some being of a more dead and pale Colour; 'tis made of the Tincture of a Vegetable, as some say, but what, or how done, I cannot as yet learn; only Note, that the best Sorts come from *Venice* and *Florence*.

Red-Lead is the lightest of all Reds now in Use; 'tis a sandy harsh Colour, and such an one, as is not easily ground very fine, although you bestow much Labour on it; this Colour is made out of common Lead, by first reducing it to a Litharge and that Litharge being afterward ground to a Powder in a Mill, is afterward conveyed into a hot Furnace, for that Purpose, where 'tis continually kept stirring with an Iron-Rake, till it has attained to the Colour of a fine, pale

22 *The Art of PAINTING.*

Red. The whole Process you may see more at large in Mr. Ray's Appendix to his Catalogue of hard *English* Words. Note, that this, tho' it be a Sandy Colour, yet it bears a very good Body in Oil, and binds very fast and firm, being also a quick Drier.

Spaniſh Brown, is a dark, dull Red, of a Horse-Flesh Colour; 'tis an Earth, it being dug out of the Ground, but there is some of it of a very good Colour, and pleasant enough to the Eye, considering the Deepness of its Colour: 'Tis of great Use among Painters, being generally used as the First or Priming Colour, that they lay on upon any Kind of Work, being cheap and plentiful, and a Colour that works well, if it be ground fine, as you may do with less Labour than some better Colours do require. The best Sort is the deepest Colour, and freest from Stones; the other Sorts are not so good to give a Colour to the Eye, - but yet they serve as well as any others for a Priming Colour.

Y E L-

Y E L L O W S.

Yellow-Oaker is of two Sorts, one called Plain-Oaker, and the other Spruce-Oaker, the one is much a lighter Colour than the other; 'tis a certain concrete or stony Substance, found among stiff Clays in divers Parts of this Kingdom; but those Parts that contain most of it, is the *Shot-over-Hills* near *Oxford*, from whence most of the Yellow-Oaker, that is sold in *England*, is dug out; 'tis a Colour, that with Pains, will grind very fine; it bears an excellent Body, and resists the Weather well.

Pink-Yellow, is the Tincture of a Vegetable, whose Substance being reduced to a Mucilage, and after dried, becomes a good light Yellow, a little inclining to a Green; 'tis a Colour that grinds very easly, and bears a good Body.

Orpiment is that Colour that some call Yellow-Arsenick; 'tis a good Colour for some Uses; but very troublesome to grind, being a Mineral stony Substance of a poisonous Nature; therefore take care that the Fumes of it don't offend

24 *The Art of PAINTING.*

the Brain in the Time of Grinding.

Masticote, is a good Light-Yellow for most Uses, especially in making Greens, of which several Sorts may be framed out of this Colour, being mixt with Blues; 'tis a Colour that grinds fine, and bears a good Body.

G R E E N S.

VErdigrease is the best and most useful Geeen of all others; 'tis a Colour made out of Copper, being no other than the Rust of that Metal promoted by the Fumes of four Wine, and the Rape of Grapes; the Process of which, as 'tis performed at *Montpelier* in *France* (where the Best is said to be made) you may find in Mr. *Ray's Travels*, pag. 454. 'Tis a delicate Green inclining to a Blue-ish, but with a little Pink-Yellow, it makes the delicatest Grass-Green in the World; 'tis a Colour that will grind very fine, but not without some Pains; and when ground fine, it lies with a good Body, and works well. At the Colour-Shops there is a Sort of it that they call Distilled-Verdigrease, being a Sort

Sort that is wholly purified from Dross and Filth, of good Use in Fine-Work, but too dear in Vulgar-Painting.

Green-Bice is a Colour of a Sandy Nature, and therefore not much used; Green-Verditer is also a Sandy-Colour, neither of them bear any good Body, and are seldom used, except in Landscape, where Variety is required.

B L U E S.

BLUE-BICE bears the best Body of all bright Blues used in common Work, but 'tis the Palest in Colour; it works indifferent well, but inclines a little to be Sandy, therefore it requires good Grinding, and that on a very hard Stone; 'tis a Blue that lies best near the Eye, of any now in Use, except Ultra-Marine, a Colour produced from the Tincture of Lapis-Lazuli; the Process of doing which you may find in a Book, called, *Modern Curiosities*. But this is so vastly dear, that 'tis not to be used except in Pieces of great Price.

Blue-Verditer is a Colour of no good Body, but something Sandy, and of no

26 *The Art of PAINTING.*

very good Colour of itself, being apt to turn greenish, and being mixt with Yellow, makes a good Green.

Indigo is a dark Blue, if workt by it-self; to remedy which, Whites are usual-ly mixt, and then it makes but a very faint Blue. This Colour is the Tincture of a Vegetable called by that Name, much growing in both the *Indies*, the Leaves of which being put into wooden Cisterns, filled with Water, are often violently stirred about, till the greatest Part be reduced to a Slime, or Muci-lage, which being separated from the Water, when funk to the Bottom, and dried, produces that Substance which we call Indigo; 'tis a Colour that grinds very fine, and lies with a good Body, and is very much used in vulgar Paint-ing.

Note, that the longer this Colour is ground, the more beautiful and fair it looks.

Smalt is the most lovely Blue of all others, if it lie at a Distance, but it must be only strowed on upon a Ground of White-Lead; for it is a Colour that carries no Body in Oil, it is so sandy; besides,

besides, Oil changes the Colour, and makes it look quite black, except Whites be mixed, and they spoil the Beauty of the Colour and make it faint; therefore the best Way to lay it on is by strowing (as I shall show in the following Work) and then there is not a more glorious Colour in the World.

Note, That of this Colour there are two Sorts, the one much finer than the other, but the Coarsest gives the most glorious Colour, of all, if lookt on at a Distance, for near the Eye the Beauty is not so great; the Finest is that which is called Oil Smalt, which if ground with White Lead, may be laid in Oil; but it bears not a good Body, and besides works with much Difficulty.

Umber is a Colour that really has no Affinity with the others before-mentioned, being neither a White, Black, Red, Yellow, Blue or Green, yet is a Colour of as great Use as any of the rest in vulgar Painting; 'tis an Earth or Mine, dug out of a certain Island in the *Mediterranean-Sea*, being of the Complexion of that which among us is called a Hair-Colour; it grinds very fine, and bears

28 *The Art of PAINTING.*

the best Body of any Earthy-Colour that's now in Use, and when burnt becomes the most natural Shadow for Gold of all others, and with a Mixture of White, it resembles the Colour of New Oaken-Wainscot the nearest of any Colour in the World; it dries quickly, and with a good Glofs.

A Term explained in the fore-going Notes, about bearing a Body.

Some may say, What is to be understood by a Colour's bearing a Body? I say then, to bear a Body, is, to be of such a Nature as is capable of being ground so fine, and mixing with the Oil so intirely, as to seem only a very thick Oil of the same Colour; of this Nature are White-Lead, and Ceruss, Lam-Black, Ivory-Black, Vermilion, Red-Lead, Lake, Pink, Yellow-Oaker, Verdigrease, Ultra-Marine, Indigo, Blue-Bice, Umber, and Spanish-Brown: Blue-Bice and Red-Lead, indeed, are not so fine as the rest, but yet so fine as they may be said to bear a very good Body. All these may be ground so fine as to be like,

like, even Oil itself, and then they also may be said to work well, spreading so smooth, and covering the Body of what you lay it upon, so intirely, as that no Part will remain visible where the Pencil hath gone, if the Colour be work'd stiff.

Whereas on the contrary, Verditors and Smalts, with all the Grinding imaginable, will never be well-imbodied with the Oil, nor work well; indeed, Bice and Red-Lead will hardly grind to an Oily Fineness, nor lie intirely smooth in the Working, yet may be said to bear an indifferent Body, because they will cover such Work very well that they are laid upon; but such Colours as are said not to bear a Body, will readily part with the Oil, when laid on the Work; so that when the Colour shall be laid on a Piece of Work, there will be a Separation, the Colour in some Parts, and the clear Oil in others, except they are temper'd extream thick.

C H A P. III.

*Of the Burning of Colours, or Preparing
of them that require to be so used.*

OF this Nature there be divers Sorts; as, first, Lam-Black, a Colour of so greasy a Nature, that except it be burnt, 'twill require a long time to dry.

Secondly, Umber, if you intend it for the Colour of a Horse-Hair; or to be a Shadow for Gold: then burning fits it for that Purpose, by making it brighter and darker.

Lam-Black must be burnt, or rather dried thus: Put it into an Iron-Ladle, or a Crucible, and set it over a clear Fire, letting it remain till it be red-hot, or so near it, that there is no manner of Smoke arises from it.

Umber must only be put into the naked Fire in large Lumps, and not taken out till they be thoroughly red-hot: If you are more curious you may inclose it in a Crucible, and then put it into the Fire till it be red-hot; then take

The Art of PAINTING. 31

take it out, and when cold, put it up for Use.

Ivory must be burnt thus: Fill two Crucibles with Ivory-Shavings, then clap their two Mouths together, and bind them fast with an Iron-Wire, and lute the Joints close with Clay, Salt, and Horse-Dung, well beaten together; then set it in a Fire, covering it all over with Coals: and let it remain therein, till you are sure the Matter incloſed in the Crucibles be throughly red-hot; then take it from the Fire, but open not the Crucibles till they are perfectly cold; for if you should open them while hot, the Matter would turn to Ashes; the same will be done if the Joints are not luted close, for 'tis only the Exclusion of all Air, that prevents any Matter whatever that's burnt to a Coal, from turning to a white Ash, and preserves the Blackness.

C H A P.

C H A P. IV.

How to wash such Colours, as for their Grittiness are not otherwise to be made fine enough for certain Uses.

Some Colours are of such a gritty, sandy Nature, that 'tis impossible to grind them so fine as some curious Works do require; therefore, to get forth the Flower and Fineness of the Colour, you must do thus: Take what Quantity of Colour you please to wash, and put it into a Vessel of fair Water, and stir it about till the Water be all coloured therewith; then if any Filth swim on the Top of the Water, scum it clean off. and when you think the grossest of the Colour is settled to the Bottom, then pour off that Water into a second Earthen-Vessel that is large enough to contain the first Vessel-full of Water four or five Times; then pour more Water into the first Vessel, and stir the Colour that remains till the Water be thick; and after it is a little settled, pour that Water also into

into the second Vessel, and fill the first Vessel again with Water, stirring it as before: Do thus sooften till you find all the Finest of the Colour drawn forth, and that none but coarse, gritty Stuff remains in the Bottom; then let this Water in the second Vessel stand to settle till it be perfectly clear, and that all the Colour be sunk to the Bottom; which when you perceive, then pour the Water clear from it, and reserve the Colour in the Bottom for Use; which must be perfectly dried, before you mix it with Oil to work.

The Colours thus ordered, are Red-Lead, Blue and Green-Bice, Verditer Blue and Green, Smalt, and many times Spanish-Brown, when you would cleanse it well for some fine Work, as also Yellow-Oaker, when you intend to make Gold-Size of it.

Take Notice also, That unless you intend to bestow some Cost, you need not be at the Trouble to wash your Colours, but use them for coarse, ordinary Work, as you buy them at the Shops.

C H A P. IV.

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C H A P. V.

How to grind Colours with Oil.

When you come to grind Colours, let your Grinding-Stone be placed about the Height of your Middle; let it stand firm and fast, so that it joggle not up and down: then take a small Quantity of the Colour you intend to grind (two Spoonfuls is enough) for the less you grind at a Time, the easier and finer will your Colour be ground; lay these two Spoonfuls of Colour on the Midst of your Stone, and put a little of your Lindseed-Oil to it (but be sure you put not too much at first) then with your Muller mix it together a little, and turn your Muller 3 or 4 Times about, and if you find there be not Oil enough, put a little more to it, and grind it till it come to the Consistence of an Ointment; or appears as free from Sandinefs, or any sort of Lumps, as the most curious Sort of Butter; for then it grinds much

The Art of PAINTING. 35

much better and sooner, than when
'tis so thin as to run about the Stone:
You must oftentimes, in the Grinding,
bring your Colour together with a
Piece of Lanthorn-Horn, and with
the same keep it together in the
Middle of your Stone; when you find
you have ground it fine enough by
the continual Motion of your Muller
about the Stone, holding it down as
hard as your Strength will permit
(which you must also move with such
a Sleight, as to gather the Colour under
it) and that no Knots nor Grittiness re-
mains, but be as fine even as Butter, or
as the Oil itself, then with your Horn
cleanse it off the Stone into a Gally-Pot,
Pan, or whatever else you design to
put it into, and then lay more Colour
on your Stone, and proceed to grinding
as before: Do so thus often till you have
ground as much of this same Colour, as
shall serve your Occasions; and if you
grind other Colours after it, let the Stone
be well cleansed from the first Colour,
with a Cloth and fine dry Ashes, or
Sand.

Some grind at one Time, so much of
every-

36 *The Art of PAINTING.*

every Colour, as may be sufficient to serve a long Time together, which they keep tied up close in Ox or Sheeps Bladders; and by this Method a Man shall prevent the Daubing of himself too often by Grinding of Colours.

Those that list not to be at the Trouble of Grinding of Colours themselves, may have of any Sort, ready-ground, at the Colour-Shops, at reasonable Rates, either in smaller or larger Quantities as they have Occasion, from an Ounce to an Hundred-Weight or more.

C H A P. VI.

*How to order Colours for Working, after
they are ground.*

When you have ground your Colours (if you observe my Directions in Grinding) they will be too thick for Use without the Addition of more Oil; therefore, when you have ground those Colours you desire, and intend to use them, either simply by themselves,

themselves, or oompounded with others, according as your Fancy or Occasions require, you must then add more Oil unto them, till they be so thin as not to let the Ground on which they are laid be seen through them; for if it be so thin as to let the Ground be seen through them, or to run about when it be laid on, it is not good, and will require to be coloured the oftner before your Work be perfect and substantial; whereas, if your Colour be as stiff at it can well be wrought, your Work will be done with more Speed; once Doing being then more than three Times Doing with thin Colour.

Here, by the Way, take Notice of the Fraud and Deceit of common Painters who commonly agree to do Work by the Yard at a certain Price, and the Work to be coloured three Times over, which they commonly paint with such thin Colour (to avoid the Labour of Grinding, a little Colour serving a great deal of Oil, and besides it works with less Pains, and takes up less Stuff) that all three Times doing over is not so substantial, as one Time would be, if the Colour had

38 *The Art of PAINTING.*

had a thick and substantial Body: And I'll maintain, that three Times Colouring with substantial and well-bodied Colour, shall last ten Times as long as that which is wrought thus slightly by common Painters.

In mixing Oil with your Colours, take this further Note, That if the Colour to be mixt be your Priming Colour, (that is, the first Colour you lay on) it ought to be made very thin, that it may have Oil enough to pierce into the Wood, which is much for its Preservation; but after your first Colour is laid, let your next be thicker, as before is taught.

Some Colours will be a long Time before they be dry, if mixt only with plain Linseed-Oil; to remedy which, there is a Way to prepare Linseed-Oil by Art, to make any Colour dry that is mixt with it. As for Example, To a Quart of Linseed-Oil, add two Ounces of the Litharge of Lead (which may be had at every Drugster's Shop) powder it finely before you put it to the Oil; when you have mixt it, set it on the Fire in an Earthen-Pan, and let it boil for near an

Hour,

Hour, more or less, till the Oil be grown thick and fat, and almost of the Thickness of Treacle that comes from Sugar; then set it a little on the Fire, and stir it well, then put out the Flame, and let the Matter stand till it be thoroughly cold, and the Litharge well settled to the Bottom; then pour off the clear Oil, and keep it for Use in a Bladder close tied up; for want of that in a Glass Bottle.

When you mix up your Colours for Working, put three Parts of Plain Linseed-Oil, and one Part of this Drying-Oil, together in a Pan, and mix them well together, and with this temper up your Colours; this Fat-drying-Oil shall not only make your Colours dry sooner than Plain-Oil, but it shall also add a Beauty and Lustre to the Colours; so that they shall dry with a Gloss, as if they had been varnished over.

Some Colours indeed don't need to have their Drying hastened by a fat Oil; such are Red-Lead, Verdigrase, and Umber; these are very drying in their own Nature, but yet fat Oil added to these also, adds a great Beauty and Lustre to the Colour.

40 *The Art of PAINTING.*

Some Painters, to make their Colours dry, take Copperas, and having beaten it to Powder, burn it in a Fire-Shovel, as People do when they burn Allom; that is, they set it on the Fire, till being melted with the Heat, it being continued thereon so long, till all the Moisture be exhaled, and the Matter remain a dry white Calx; some of this Powder of Burnt-Copperas, being added to the Colours in Grinding, shall make the Colour dry very well.

The Way before-recited for Making of Drying Oil, has one Inconvenience in it, that it makes the Oil of a Deep-Reddish-Colour, which in some Cafes may alter the native Beauty of some Colours, as Whites, which be apt to become Yellow, also Blues may by this Means become Greenish.

To prevent this, a Drying-Oil may be prepared, as shall be clear and White of Colour, in the Manner following.

Put the afore-mentioned Quantity of Linseed-Oil to the like Quantity of Litharge; put the Mixture into a Glas, and set it in the hot Sun, for a Month, in the Summer-Time, stirring the Litharge

The Art of PAINTING. 41

charge and the Oil well together, twice a Week, during the whole Time, and you shall not fail in that Time to obtain an Oil, very white and clear (for the Sun takes away all Colour, either from Linseed, or Walnut-Oil) but also, it will become in that Time very fat and thick, and attain to a very drying Quality.

By the same Methods, may Nut-Oil be made too dry as well as that of Linseed, it being preferred before that of Linseed, for all White-Painting that is not exposed to the open Air; for 'tis observed, that in all close Places, Linseed Oil is apt to make White-Lead turn Yellow.

Take Notice, That all simple Colours used in House-Painting, appears much more beautiful and lustrous, when they appear as if glazed over with a Varnish, to which both the drying Oil before-mentioned contributes very much, and also the Oil of Turpentine, that the Painters use to make their Colours dry soon; but Experience teaches, that some good clear Turpentine, dissolved in the aforesaid Oil of Turpentine, before it

C be

42 *The Art of PAINTING.*

be mixt with the Oil-Colours, shall make those Colours shine when dry, and preserve their Beauty beyond all other Things; drying with an extream glassy Surface, and much more smooth than Oil alone; and shall also better resist the Injuries of Air and Weather, provided too much be not put in.

C H A P. VII.

How to make a Size, for the Gilding both with Gold and Silver.

THE Operation is thus, for the making of Gold-Size: Take Yellow-Oaker and grind it on a Stone with Water till it be very fine, and afterwards lay it on a Chalk-Stone to dry; this is the common Way: Or, you may wash it, as is taught in the fourth Chapter. For, when it is washed, to be sure. nothing but the purest of the Colour will be used; and besides, 'tis done with less Daubing.

When your Oil and Oaker are thus pre-

prepared, you must grind them together, as you do other Oil-Colours, only with fat Drying-Oil; but 'tis something more laborious Work, and must be ground very fine, even as Oil itself: For the Finer it is, the greater Lustre will your Gold carry that is laid on it.

Here Note, That you must give it such a Quantity of your fat Oil, that it may not be so weak as to run when you have laid it on, nor so stiff, that it may not work well; but of such a competent Body, that after it is laid on, it may settle itself smooth and glassy; which is a chief Property of good Size.

Silver-Size is made by Grinding of White-Lead with fat Drying-Oil; some adding a very little Verdigrease, to make it bind.

The Practice of Gilding with either Gold or Silver, I shall refer to Chapter XIV.

C H A P. VIII.

*The Practice of Working Oil-Colours,
and Painting of Timber-Work, after
the Manner of Vulgar Painting.*

THAT which I here call Vulgar Painting, is only the Way and Manner of Colouring all Manner of Wainscot, Doors, Windows, Posts, Rails, Pails, Gates, Border-Boards for Gardens, or any other Material, that requires either Beauty, or Preservation from the Violence of Rain, or Injury of Weather; the Method of Doing which I shall lay down as plain as I can. Suppose, then, that there be a Set of Palisadoes, or a Pair of Gates, or some Posts and Rails to paint, and I would finish them in a Stone Colour; first look over the Work, and take Notice whether the Joints be open in the Gates, or whether there be any large Clefts in the Posts; for if these are not secured, the Wet will insinuate itself into those Defects, and make the quicker Dispatch

Dispatch in ruining the whole Work; let the first Business therefore be, to stop up these Places smooth and even, with a Putty made of Whiting and Linseed-Oil, well beaten together on the Grinding-Stone, with a Wooden-Mallet, to the Consistence of a very stiff Dough, and with this let all the Crannies, Cleits, and other Defects be perfectly filled up, that it may be equal to the Surface of the Stuff; then, proceed to the Priming of the Work, with some Spanish-Brown well ground, and mixt very thin with Linseed-Oil; with this do over the Work, giving it as much Oil as 'twill drink up; this in about two Days will be indifferent dry, then if you would do the Work substantially, do it over again with the same Priming-Colour; when this is thorough dry, then take White-Lead well ground and tempered up, not too thin, for the stiffer you work it, the better Body will be laid on, and the thicker Coat of Colour that your Timber is covered withal, the longer 'twill last; let this Colour be well rub'd on, and the whole Surface of the Work be so intirely covered, that there remain no Crick nor

46 *The Art of PAINTING.*

Corner bare which you may easily do by jobbing in the Point of a Bristle-Brush: Let this first Colouring dry, and then go over it a second Time, and if you please, a third also; the Charge will be a little more, but the Advantage will be much more great.

This Course is sufficient for any Kind of Timber-Work, that requires only a plain Colour; whether you thus cover the Work with a Stone-Colour, or else with a Timber-Colour in Umber and White, or a Lead-Colour with Indico and White; that with White being the cheapest of the three by much: Nay, I have known some lay over their Work only with a Coat of Spanish-Brown, by Tempering it up more stiff than was done for the two first Primings; which in some Respects is cheapest of all, and preserves the Timber, perhaps, as well as any. Now he that is able to bring the Work thus far on, has proceeded to the highest Pitch of that Vulgar Painting, that aims at Preservation beyond Beauty, though something of Beauty is necessarily included in this also; but this is not all, for he that is arrived thus far, is in a fair

Way

Way to other Perfections in the Art of Painting. But, for the Pannelling of Wainscot with its proper Shadows, and for imitating Olive and Walnut-Wood, Marbles, and such like; these must be attained by ocular Inspections, it being impossible to deliver the Manner of the Operation by Precept, without Example; and I am bold to affirm, that a Man shall gain more Knowledge by one Day's Experience, than by a hundred spent to acquire it some other Way.

I advise, therefore, all those that desire an Insight into this Business, to be a little curious, if Opportunity offers, in observing the Manner of a Painter's Working, not only in Grinding his Colours, but also in Laying them on, and Working in them; in all these, observing the Motion of his Hand, in the Manage of any Kind of Tool; and by this Means, with a little Imitation, joined to the Directions here given, I doubt not, but in a short Time, you may arrive to great Proficiency in the Business of Vulgar Painting.

Note, That if, when you have made use of your Colours, there be Occasion

48 *The Art of PAINTING.*

of a small Secation till the Work be finished; in this Case 'tis best to cover the Colour in your Pots with Water, for that will prevent their drying, even in the hottest Time.

And for your Pencils, they ought, so soon as you have done Working, to be well washt out in clean Linseed-Oil, and then in warm Soap-Suds; for if either Oil or Colours be once dried in the Brush or Pencil, 'tis spoiled for ever.

It has been observed, that Timber laid over with White, when it has stood some Time in the Weather, the Colour will crack and shrink up together, just as Pitch does, if laid on any Thing that stands in the Sun; the Cause of this is for that the Colour was not laid on with a stiff Body, able to bind itself on firm and fast.

For the Close of this Chapter take Notice, That, if you shall at any Time have Occasion to use either Brushes that are very small, or Pencils, as in many Cases there will be Occasion, you ought then to dispose of the Colours you use upon a Pallet (which is a wooden Instrument, easy to be had at any Colour-Shop)

Shop) and there work and temper them about with your Pencil, that the Pencil may carry away the more Colour; for you are to note, That, if a Pencil be only dipt into a Pot of Colour, it brings out no more with it than what hangs on the Outside, and that will work but a little Way; whereas, if you rub the Pencil about in the Colour, on the Pallet, a good Quantity of Colour will be taken up in the Body of the Pencil; and besides all this, you may work your Pencils better to a Point on a Pallet, than you can do in a Pot; the Point of a Pencil being of greatest Use in divers Cases, especially in Drawing of Lines, and all Kinds of Flourishing.

C H A P. IX.

What Colours are most suitable, and set off best one with another.

BY Setting off best, I mean their making each other look most pleasant; for two of some particular Co-

50 *The Art of PAINTING.*

lours put together, or one next the other, shall add much to the Beauty of each other, as Blue and Gold, Red and White, and such like: But, Green and Black put together, look not so pleasant; neither do Black and Umber, or Haw-Colour, and such like.

All Yellows, then, set off best with Blacks, with Blues, and with Reds.

All Blues set off best with Whites and Yellows.

Greens set off well with Blacks and Whites.

Whites set off well enough with any Colour.

Reds set off best with Yellows, and Whites, and Blacks.

Gold looks well upon a White-Ground, especially if the Matter to be gilt be carved.

Gold and Black also shew very well.

Gold on Timber-Colour, shews also very well.

So does Gold and a Horse-Flesh Colour, made with the brightest Spanish-Brown.

But the most glorious Ground of all others for Gold, are the Vermilion-Red,

Red, the Smalt-Blue, and the Lake,
laid on a light Ground.

Of some Colours that arise from Mixture.

Ash-Colour is made of White-Lead
and Lam-Black; if a deep Ash-Colour,
then take the more Black, but if a light
one, then take but little Black, and
most White.

A Lead-Colour is made of Indico and
White.

A Colour resembling new Oaken
Timber, is made of Umber and White-
Lead.

A Flesh-Colour is compounded of
Lake, White-Lead, and a little Ver-
million.

For a Buff-Colour, take Yellow-
Oaker and White-Lead.

For a Willow-Green, take Verdigrease
alone.

For a light Willow-Green, take Ver-
digrease and White.

52 *The Art of PAINTING.*

For a Grass-Green, take Verdigrease and Pink.

A Carnation is made of Lake and White.

Orange-Colour, of Yellow-Oaker and Red-Lead.

For a Light-Timber-Colour, mix Spruce-Oaker and white, and a little Umber.

For a Brick-Colour, Red-Lead, and a little White and Yellow-Oaker.

For a Straw-Colour, take White and a little Yellow-Oaker.

Olive-Wood is imitated with Oaker, and a little White veined over with burnt Umber.

Walnut-Tree is imitated with burnt Umber, and White vein'd over with the same Colour alone; and in the deepest Places, with Black.

Pails and Posts are sometimes laid over only with White, which they call a Stone-Colour.

Sometimes Posts and Pails are laid over with Indico and White, which is called a Lead-Colour.

Window-Frames are laid in White, if the Building be new; but if not, then they

they generally are laid in Lead-Colour, or Indico and White, and the Bars with Red-Lead.

Doors and Gates if painted in Panels, then the Shadows of a White-Ground are Umber and White; but if laid in a Lead-Colour, then the Shadows are listed with Black.

'Tis not possible to set down all those Varieties of Colours, that may be produced by Mixture; they that would see more, may peruse Doctor Salmon's Polygraphice, where they shall find great Variety. But those, which I have here given an Account of, are sufficient for common Painting.

C H A P. X.

Of Painting Sun-Dials; and first of the Plains, on which Dials are to be drawn.

Dial-Plains are of two Sorts, first, such as are made on the Wall of a Building; or secondly, such as are drawn on Tables.

The

54 *The Art of PAINTING.*

The first Sort if they are made on Brick-Work, is done by Plaistering on the Wall with Lime, Sand, and Hair mixt; this, if well drencht with Linseed-Oil, after 'tis dry, or as long as it will drink in any, may be durable enough.

But a better Way, is to temper the Lime, Sand and Hair with Linseed-Oil, which will be no great Charge, but of great Advantage; for this Mixture will equal in Time the Hardness of a Free-Stone, and keep the Surface as free from the Injuries of Weather.

If you were to work on a Stone, the best Way is to drench the Stone with Linseed-Oil, till it will drink in no more; then shall whatever you paint upon it, be the better prepared against the Ruins of Time.

Now for Tables of Wood, they being the most common, I shall give such Directions for the Making of them, as I have always found most profitable and fit for this Purpose.

The Woods that I find best for this Use, are the clearest Oak, and the reddest Fir, provided it be not turpentiny. Between

Between these two Woods, I find little Difference, as to their Alteration by the Weather; both being subject to split, in Case they are bound, and have not free Liberty to shrink with dry Weather, and swell with Wet; but as to their Lasting, I judge Oak to be the better: And how long Fir will last, when secured and defended with Oil-Colours, I have not yet experienced; but we may judge that good Red-Fir, that is hard, will last the Age of any Man whatsoever, if it be secured as Things of this Nature ought to be.

In Working any of these Kinds of Woods, I advise, that first your Boards be cut to such a Length as you intend your Dial-Board shall be of, and so many of them as may make up the Breadth designed; then, let them be jointed and plained on both Sides, and afterwards set to dry (for 'tis observed, That tho' Boards have lain in an House never so long, and are never so dry, yet when they are thus shot and plained, they will shrink afterwards beyond Belief, if kept dry:) When you think they are dry enough and will shrink no more, let

56 *The Art of PAINTING.*

let them be again shot with good Joints, and let every Joint be secured by two wooden Dove-Tails, let in croſs the Joint on the Back-side; but let this be done, when the Boards are glued together and well dried; and what a Dove-Tail is, every Joiner knows. After it is thus glued, and the Joints be ſufficiently dry, then let the Face of the Board be very well plained and tried every Way, that it may be both ſmooth and true, and the Edges shot true, and all of a Thickneſs, as Pannels of Wainscot are commonly wrought; the Edges muſt be thus true and even, that it may fit into the Rabet of a Moulding put round it, just as a Pannel of Wainscot doth in its Frame: This will give Liberty to the board to ſhrink and ſwell, without Tearing; whereas, Mouldings that are nailed round the Edge, as the common Way is, do ſo restrain the Motion of the Wood, that it cannot ſhrink without Tearing: But, Boards made this Way will laſt a long Time, without either parting in the Joints, or ſplitting in the Wood.

Dials are sometimes drawn on Plains, lined with Copper or Lead, that they may be free from splitting or tearing; but I prefer a Board (if it be made as above is directed) before them in many Respects: As first, it is much cheaper. Secondly, Lead (and Copper too a little) will swell with the Heat of the Sun, and grow in Time so hollow, and as it were swelled outwards, that the Truth of its Shadows will be much injured. Thirdly, the Colours will be apt to peel from the Metal, and the Dial will by that Means be in Danger to be sooner defaced, than if it were painted on a wooden Plain.

C H A P. XI.

*How to make the best Glue, for Gluing
the Joints of Dial-Boards.*

THIS may by some, perhaps, be counted needless to be inserted, especially in these Parts, where few Men that work in Timber, can be ignorant of it:

But

58 *The Art of PAINTING.*

But suppose a Gentleman that lives in the Country, have a Mind to have a Dial-Board made, and being not willing to send to *London*, employs his own Carpenter; I must tell you, that many Country Carpenters scarce understand the right Way of making or using Glue, to whom such a Direction as this may prove very welcome.

Take, then, a Quart of Water, and set it on the Fire, then put in it about half a Pound of good Glue, and boil them gently together on a soft Fire, till the Glue be wholly dissolved, and of a due Consistence; for, if it be too thin, the Wood will so drink it up, that there will not remain a Body sufficient to bind the Parts together; on the contrary, if it be too thick, 'twill not give Way for the Joint to shut close enough, to be strongly joined; for though 'tis Glue that makes the Joints stick, yet where there is so much of it, that the Joint can't close exactly, 'twill never hold firmly.

Whenever you come to use Glue, take care that it be first throughly hot; for Glue that is not hot, never takes firm hold of the Wood.

Be

Be sure also, that the Substance you are to glue, have not been touched with Oil, nor injured with Grease; for where these have before touched, Glue will never take fast hold after: But, Note, that after a Thing is once glued fast, no Grease nor Oil, can then hurt it.

Your Glue being made ready, and the Joints of your Boards shot true, set both the Faces of the Joints close together, and both also turned upwards; then dip a Brush in the Glue, and besmear the Faces of both Joints, as quick as possible; then clap the two Faces of the Joint together, and slide them longways one upon another, two or three Times, to settle them close; and so let them stand till they are firm and dry.

C H A P. XII.

What Colours are requisite for the Painting of a Sun-Dial.

Four Colours are sufficient for this Work, viz. Spanish-Brown, for the Priming or first Colour.

White-

60 *The Art of PAINTING.*

White-Lead, for the second Colour
and finishing the Face of the Table.

Vermilion, for Drawing of the Hour-
Lines.

And Lam-Black, for the Figures in
the Margent, respecting the Lines of
every Hour, if it be a plain Dial.

But if you intend to gild the Dial,
and the Figures, then there is required
some others, as Gold, and the Size to
lay it on, and Sinalt for a Blue-Ground,
if you intend a rich Colour: But some
lay the Ground, where the Figures are
gilt, with Vermilion; and that shews
well, if the Figures are listed with
Black, and a Black Moulding round the
Dial.

The next Particular, should be the
Practice of Painting the Dial, but before
that can be done, the Draught must be
drawn; and, therefore, I think a Word
of Advice may not be unseasonable, if
it directs you to the best Authors, that
have written of that Subject.

To which Purpose, I place first, *Stir-
rap's Dialling*; as being of excellent use,
to acquaint a young Learner with the
Knowledge of the Sphere.

The

The Art of PAINTING. 61

The next in order shall be *Collin's* Dialling; a Book of great Worth throughout.

The third, *Leybourn's* Dialling; in which you have the best Ways for Drawing East and West-Dials, and far Decliners: He is excellent also in the Instrumental Way.

The fourth, is *Collin's* Sector on a Quadrant; in which you have communicated the cut of a Scale, that, by knowing the Declination, gives all the rest of the Requisites of an Upright-Decliner, by Inspection only, with as great Exactness, as by the nicest Calculation: Besides, it teaches the Way of Drawing the Hours of a Dial^p by the Tangent-Line, and also by the Scale of Hours; two of the best and most expeditious Ways that ever were yet found out.

C H A P. XIII.

The Practice of Painting Sun-Dials.

WHEN, according to the Rules given in the Books afore-mentioned, you

62 *The Art of PAINTING.*

you have drawn on Paper, the Draught of your Dial, and that your Board be ready, and your Colours prepared according to the Directions before given, you must in the Painting of your Dial proceed thus: Take Spanish-Brown, that is well ground and mixed somewhat thin, and with a large Bristle-Brush, dipt therein, colour your Board or Plain all over, both on the Back as well as Foreside, so that you leave no Part uncoloured; this is called the Priming of your Dial: When this first Colour is dry, do it over again with more of the same Colour, tempered somewhat thicker; and when this is also dry, you may, if you please, do it over again with the same Colour; your Work will be the substancialler, and last longer.

When this last Time of Colouring with your Red-Lead be dry, then with White-Lead colour the Face of your Plain over; and when it is dry, work it over again three or four Times more, successively, after each Drying; so shall the Face of your Plain be sufficiently defended against the many Years Fury and Violence of Weather.

When

When the last Colouring of your White be dry, you must draw on your Plain (with a Black-Lead Pencil) a Horizontal-Line, so far distant from the upmost Edge of your Dial, as your Discretion shall think fit, or your Experience finds to be most becoming your Plain; then set out the Margin of your Dial with Boundary-Lines, for the Hour, half Hour, and Quarter Divisions of your Dial as in most Dials you see is done:) When you have thus set out the Margin and Boundary-Lines of your Dial, then take your Paper-Draught fairly drawn, and place the Horizontal-Line, which you before drew on your Plain; in doing of which, observe to place the Center according as the Situation of your Plain, for Convenience Sake, requires. Thus, if your Dial be a full South-Dial, then let the Center be exactly in the Middle of your Plain: But if your Dial decline from the South, either East or West, then place not the Center of your Draught in the Center of your Plain, but nearer to one Side or other of it, according as it declines, having also respect to the Quantity of its Declination.

For

64 *The Art of PAINTING.*

For Example: If your Dial decline Eastwards, then let the Center of your Draught be plac'd between the Center and the Eastern-Side of your Plain; the Quantity thereof must be according as your Dial declines; if it decline but a little, then place the Center of your Draught but a little from the Center of your Plain; and if it declines much, place the Center of your Draught the more out of the Center of your Plain: The Reason of my advising this, is, that by so doing, you may gain a greater Distance for those Hour-Lines, which in Declining-Plains fall near together on one Side than they are on the other; for which Reason, I always use it in all Declining-Plains, except they decline far, as between 80 and 90 Degrees: For, then, we commonly draw them without Centers, to gain the more Distance for the Hour-Lines.

When your Paper-Draught is thus artificially placed on the Plain, and fastened with Pins or small Tacks; then let the Draught thereof be transferred to the Plain, by laying a Ruler over every Hour, half Hour, and Quarter Division:

The Art of PAINTING. 65

Division: And where your Ruler shall cut or intersect the Boundary-Lines of your Margin, there make Marks, by drawing Lines with a Black-Lead Pencil, of such a Length as each Division requires (or is designed by your Boundary-Lines) observing always to draw the Hour, and half Hour Lines quite through your Margin, that they may be Guides for the right Placing the Figures, and for a small Spot that is usually placed in the Margin, right against the half Hour.

When your Dial-Draught is thus transferred to the Plain itself, you must not forget to draw the Subtile-Line, according as it lieth in your Draught, to be your Guide for the right Placing your Stile or Cock; for you must in every Particular be very exact, or else your Dial cannot be good.

When you have taken every Thing that is required from your Draught, and have transferred it to the Plain, then take your Draught off, and with Vermilion, very well ground and prepared, as before is taught, let the Boundary-Lines of your Dial, as also the Hour,

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half

66 *The Art of PAINTING.*

half Hour, and Quarter Divisions be drawn therewith; let your Colour be as thick and stiff as you can possibly work it, so as to draw a clear and smooth Line.

When your Vermilion-Lines are drawn, then with Lamp-Black let the Figures be made, and a Spot in the Middle of the Margin right against the Half Hour Line; and if you please, in the Margin, at the Top of your Plain, you may put the Date of the Year, your Name, or some divine Sentence, as is usual in Things of this Nature: Then fit in your Cock so as to make right Angles with the Plain, so shall your Dial be drawn and finished in all Respects, as a plain Dial ought to be.

C H A P. XIV.

*How to gild with Gold on an Oily Size,
either Letters or Figures, &c.*

WHATSOEVER you would gild, must first be drawn with Gold-Size (of the Making of which, see *Chap. VI.*)

according to the true Proportion of what you would have gilt, whether Figure, Letter, or whatever else it be. When you have thus drawn the true Proportion of what you would have gilt, let it remain till it be sufficiently dry to gild upon, which you shall know, by touching it with the End of your Finger; for if your Finger stick a little to it, and yet the Colour come not off, then it is dry enough: But, if the Colour come off on your Finger, then it is not dry enough, and must be let alone longer; for if you should then lay your Gold on, it would so drown it, that it would be worth nothing: But, if your Size should be so dry as not to hold your Finger, as it were, to it, then it is too dry, and the Gold will not take; for which there is no Remedy, but new Sizing: Therefore, you must watch the true Time, that it be not too wet or too dry; both Extreams being not at all convenient.

When your Size is ready for Gilding, take your Book of Leaf-Gold, and opening a Leaf of it, take it out with your Cane-Plyers, and lay it on your

68 *The Art of PAINTING.*

Gilding-Cushion, and if it lie not smooth, blow on it with your Breath, which will lay it flat and plain; then with a Knife of Cane, or for want of it, an ordinary Pocket-Knife, that hath a smooth and sharp Edge; with this, (being wiped very dry on your Sleeve, that the Gold stick not to it) let your Leaf-Gold be cut into such Pieces, or Forms, as your Judgment shall think most suitable to your Work.

When you have thus cut your Gold into convenient Forms, then take your Tool, that was before described in *Numb. 9. of Chap. I.* and breathe upon it, to make it dampish, that the Gold may stick to it; with this Tool take your Gold up (by clapping it down on the several Pieces you had before cut into Forms) and transfer it to your Size, upon which clap it down according to Discretion, and your Gold will leave your Tool, and cleave to your Size; which you must afterwards press down smooth with a Bunch of Cotton, or a Hare's-Foot: And thus you must do, Piece by Piece, till you have covered all your Size with Gold; and after it is fully dried,

dried, then with your Hare's-Foot, brush off all the loose Gold, so will your Gilding remain fair and beautiful.

If your Work to be gilt, be very large, open your Book of Leaf-Gold, and lay the Leaf down on your Work, without cutting of it into Pieces, and so do, Leaf by Leaf, till you have covered quite over, what you intend to gild: and, if some Particular Places should miss there, take up with a small Bunch of Cotton, a Piece of Leaf-Gold, cut to a fit Size, and clap it on, that the Work may be intirely covered; and, if the Gold be to be laid in the Hollows of Carved Work, you must take it up on the Point of a Camel-Hair Pencil, and convey it in, and with the said Pencil, dab it down, till it lie close and smooth.

Note, That after your Gilding is thus perfectly laid on, you may, if you please, diaper, or flourish on it, with thin burnt Umber, whatsoever shall be suitable to your Design: Let the Umber be tempered but thin, so that the Gold may appear through it; the Form and Order of which, take from Examples, which are abundant, where Painting and Gilding are found.

70 *The Art of PAINTING.*

Note further, that a Book of Gold contains 24 Leaves; each Leaf being three Inches Square; the Price of each Book is two Shillings at the Gold-Beaters; one Book will cover 216 square Inches of Work; for so many square Inches are contained in 24 Leaves, that are three Inches square, every Leaf containing nine square Inches superficial in Gold. The right Understanding of this, will much guide you in judging how many Books of Gold will serve to gild that Work, whose superficial Content in square Inches may before-hand be known.

How to gild with Silver.

IN laying on Silver upon an Oily Size, the same Method in all Respects is required as for Gilding with Gold; save only in this, that the Size upon which Silver is laid, ought to be compounded of a very little Yellow-Oaker, and much White-Lead; for the Size being of a light Colour, the Silver laid on it will look more natural, and retain its own Colour better, the whiter the Size is.

Note,

Note, That the common Painters do now generally, in Gilding, use more Silver than Gold, in most Works that are not much exposed to the Air; to which they afterwards give the Colour of Gold, by means of the Lacker-Varnish; whose Use is now so common, that if they gild any Thing that stands free from the Weather, they only gild with Silver, and so give it the Colour of Gold with a Lacker-Varnish, made of Gum-Lake, dissolved in Spirit of Wine, and laid over it.

C H A P. XV.

The Way of Painting a Blue with Smalt, the only Colours that require Strewing.

SMalt being a Colour that gives its greatest Lustre by the Way of Strewing only, I shall lay down the true Method of performing this Work. Temper up White-Lead pretty stiff with good clear Drying-Oil; let it be as stiff as it

72 *The Art of PAINTING.*

well can be to spend well from the Pencil; with this White-Colour cover over the Superficies of the Work you intend to strow with Smalt, and be very exact in the Work, for the Smalt takes no where, but on this new and moist Ground: Then take your Smalt; if the Work to be done over with it, lie flat, strow it thick on the Thing to be coloured, and with the Feather-Edge of a Goose-Quill stroke over it, that it may lie even and alike thick, on all Places; and, then, with a Bunch of Linen-Cloth, that is soft and pliable, dab it down close, that it may well take upon the Ground laid under it; and when you imagine the Ground to be throughly dry, then wipe off the loose Colour with a Feather, and blow the Remainder of it off with a Pair of Bellows; so is your Work finished. And thus you have a Method for Colouring any Kind of Work, by the Way of Strowing with Smalt, provided the Work be such as requires only the plain Colour.

But in case you design to paint any Kind of Body in Smalt, that requires Shadow for the more perfect resembling
the

the Thing you intend: As, suppose it were a Blue Bell, or a Blue Boar, or the like: In this Case when, you have drawn out the Perfect Symmetry of the Shape you intend, and have covered it with a Ground of White-Lead, well and stiffly tempered with clear and fat Linseed-Oil, then proceed to give it those necessary Shadows you intend, with good Black, well tempered; and when you have finished these Shadows, then strow on your Smalt, as before was directed; and when the Whole is dry, and the superfluous Part be taken away, the Work will appear, with all its Shadows, as exact as possible.

Note, That the Work, upon which you lay on this Ground, for to be strowed on with Smalt, ought first to be sufficiently primed and laid also over once with White, before you lay on the Ground, that you may be sure the Ground be perfectly White; for a White Ground is the only Thing that gives Beauty and Glory to the Colour of the Smalt.

In all other Cases, where the Work to be strowed over with Smalt, does not lie flat, you must take Smalt up upon a

flat Bunch of Linen-Cloth, and so dab it upon the Ground, you are to lay it upon.

C H A P. XVI.

*How to scour, refresh and preserve, all
Manner of Oil-Paintings.*

THE Oil-Paintings that I here intend, are only such as are kept from the Injuries of Weather; for such Paintings as endure the Fury of Rain and Storms (such as Sun-Dials, Posts, Pales, &c.) are not any Ways to be renewed or refreshed, but by being new coloured with the same Colour in which it was at first wrought; because that the Body and Strength of the Colour is worn out by the continual Assaults of wasting Time, and cannot be kept fresh, unless new done over, once in 3 or 4 Years, according as the Weather is found to wear it off, and make it look dull.

But, as for such Paintings that are sheltered from Weather, as all In-door Paintings

ings are, they still keep their Body and Colour, although their Beauty may be much impaired by Dust, Smoak, Fly-Shits, moist Vapours, and the like, which will in Time foil and tarnish them: To remedy which, take these few Rules.

If your Painting be Wainscoting, or any other Joinery or Carpentry-Work, that is painted in Oil, take Wood-Ashes well sifted, which mix with Water somewhat thickly; then take a strong stubbed Bristle-Brush, large, and dip it in the moistened Ashes, and therewith rub and scour your Painting all over very gently, in all Places alike; and when you find that all the Soil is taken off, then wash it clean with fair Water, and let it dry; and you will find your Painting to be near as fresh as when first laid on.

But, if your Painting be more curious, whether Figures of Men, Beasts, Landskip, Fruitage, Florage, or the like, then let your Picture be gently scoured, and then cleanly washed off with fair Water: After it is well dry, let it be run over with Varnish made with White of Eggs, and you will find the Beauty

76 *The Art of PAINTING.*

and Lustre of your Picture much recovered.

The Whites of Eggs before-mentioned, are only to be beaten to an Oil, and then curiously rubbed on, either with a clean Linen-Cloth, or a Pencil.

But *Note*, That this Scouring ought not to be practised but very seldom (as, when your Picture is very much soiled) because often and too frequent Operations in this Kind, must needs wear off a little of the Colours; therefore strive what you can to preserve their first Beauty, by keeping them free from Smoak, and by often striking off the Dust with a Fox-Tail; as likewise preserving them from Flies, by dressing up your Rooms with green Boughs, to which the Flies will gather themselves, and so not hurt your Pictures. Sir Hugh Platt, in the First Part of his *Garden of Eden*, and 17th Page, tells us of an *Italian Fancy* for this Purpose, by hanging in the Roof and Sides of the Room, small Pompions or Cucumbers stuck full of Barley, which will sprout into green Spires, on which the Flies will lodge. *Query*, Whether Vessels of Tin, made round

The Art of PAINTING. 77

round about full of Holes, filled with Earth, and every Hole planted with a Spring of Orpen, Penyroyal, Mint, &c. and watered as Need requires, would not be more beautiful and useful for this Purpose?

Another Note worth Observation, is, That all Pictures (especially those that are wrought with Mixtures of White-Lead) are apt to tarnish and grow rusty, as is seen in all ancient Pieces: To prevent which, in the Months of *May* and *June*, let your Pictures be exposed to the hot Sun three or four Days; this will draw off much of the Tarnish, and make the Colours more fresh and beautiful; and thus doing from Year to Year will preserve them wonderfully.

Although, in the Beginning of this Chapter, I mentioned Dials among those Things, that are not to be refreshed but by new Painting; yet here take Notice, That I think it not convenient at all to lay new Colouring upon the old Ground of a Sun-Dial (that is, to draw the old Lines and Figures over again in the same Posture, wherein they were drawn before)

before) but rather to take the Declination a-new, and according thereunto make a new Draught of your Dial, and proceed in the Painting of it, in all Respects, as if it were a new Dial: For it is observed. That Dials which were made many Years, as 30 or 40 Years ago (which we believe went true, when first made) will not give the true Hour now, but go very false; which is caused by some secret Motion of the Earth, not hitherto taken Notice of, which apparently alters the Declination of all Plains whatsoever. If any one requires more Satisfaction herein, let him repair to some old Dial that was made many Years ago, and according to the Distance of the Subtile from the Meridian, let him find out the Declination when first made, as any Man, that is an Artist, can easily do; then let him take the Declination of the Plain by the Sun, and he shall find these two Declinations to differ considerably, according to the Number of Years contained between your Observation and the Time of the Dial's first Making; so that a Plain that stood full South, 30, 40, or 60 Years ago,

ago, shall now decline some Degrees either to the East or West, according to the Nature of the Earth's Motion, which is that which is called the Variation of the Compass; which is found, by Observation, to differ much in the same Country, in the Space of 50 or 60 Years; as all skilled in Astronomy know very well.

C H A P. XVII.

An Experiment of very near Affinity to Oil-Painting, but of great Use to Travellers of some Kinds, to the chief Officers of Camps and Armies, Seamen, and such like.

THIS Experiment is no other than a Discovery of the Way and Mystery of Making Oil Cloth, now used for Hat-Cases; and that is this: Take of the Drying-Oil (that is mentioned in Cb. VI.) set it on the Fire, and dissolve in it some good Rosin, or (which is better, but dearer) Gum-Lack; let the Quantity

80 *The Art of PAINTING.*

Quantity be such, as may make the Oil thick as a Balsom; for it must not be so thin as to run about, if spread on a Cloth: When the Rosin or Gums are dissolved, you may either work it of it-self, or add to it some Colour, as Verdigrase for a Green, or Umber for a Hair-Colour; or White-Lead and Lamp-Black for a Grey, or Indico and White for a light Blue.

This Varnish, if spread on Canvas, or any other Linen-Cloth, so that the Cloth be fully drenched and intirely glazed over with it, and suffered to dry throughly, is impenetrable for all Manner of Wet; and if Carriers and Higlers, and such Kind of Persons, that are necessitated to travel in all Manner of Weathers, had but little light Canvas-Cloaks made for them, and these Cloaks were afterwards varnished over with the aforesaid Varnish, these Cloaks would secure them from Wet, as well as if they remained still in their own Houses; for, as I said before, no Wet will penetrate through it; four and twenty Hours Rain would make no more Impression upon it, than if it had never rained at all.

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The Officers Tents in an Army or Camp, if plaistered over with this Varnish, will be preserved as securely from all Wet, as the best Houses, and be as warm and dry; neither will there follow any great Inconvenience in Decamping; for Canvass so varnished, is almost as pliable as the naked Cloth, and not very much more weighty, especially if the Varnish be laid on plain, without any Colour mixt with it; for that is both the lighter and more pliable.

The same Advantage may Seamen reap by it, or any other Person that must necessarily attend in Storms and Rain.

A Sheep-Skin Boot well liquored with this Varnish, after the Boot is made, and so throughly done over as to lie with a Glass on the Outside, shall endure more Wet than the best Neat's-Leather Boot, being also much more pliable, easy and light; the same may be said of Shoes in great Part.

The great Reason, why the Oil-Hat-Case has not been more often in Use, is by Reason of the Difficulty required to form it into Garments, and then the very Hat-Cases themselves do let Water

82 *The Art of PAINTING.*

in at the Seams; but this Varnish being laid on after the Garments are made, does so intirely secure every Part, as there's no Possibility or Place for the Wet's Admittance.

The same may be of Advantage to Abundance of other human Necessities, too long here to enumerate; and, for securing any Kind of Timber-Work, it equals Painting with Colours in Oil, and is much more easy to attain; for Linseed-Oil and Rosin are much more easily melted together by Boiling, than Colours can any Ways be ground; and being of the Consistence of a Balsom, works delicately with a Brush, and of itself, without the Addition of Colours, bears a Body sufficient to secure all Manner of Timber-Work, equal to most Oil-Colours.

In the Working of it there's no great Skill required, if you can but use a Painter's-Brush; only let the Matter you lay it on, be so thoroughly drenched, that the Outside may be glazed with it: If you desire a Colour on the Outside, you need only grind Colour with the last Varnish you lay on.

C H A P.

C H A P. XVIII.

*How to preserve all bright Iron-Work
from Rust, and other Injuries of a
moist and corroding Air, by an Oily-
Varnish.*

TAKE good *Venetian*, or for the Want of that, the best and clearest common Turpentine, dissolve it in Oil of Turpentine, and add to it some good Drying-Linseed-Oil, in which Red-Lead hath been mixt, made clear by Infolation, or long standing in the hot Sun (for some Uses, the common Drying-Linseed-Oil may serve) mix them well together, and with this Mixture, varnish over any Sort of bright Iron-Work, such as Hinges and Locks, the Iron-Work of Cabinets, or any other Kind of Iron-Work whatever, that is used about the Houses of the Nobility and Gentry; as also all Kind of bright Arms, that are kept in Armories and other Places of Public State: 'Tis a certain Preserver of all such Iron-Work

84 *The Art of PAINTING.*

Work from Rust, let it be what it will, provided it be such as is not brought into common Use; for much Handling will wear it off, and Heat will again dissolve it; but, for all such bright Iron-Work that is used about either Carpenters or Joiners Work, that require not much Handling, as also Arms, &c. that stand up for State, rather than present Use, 'tis as I said before, an infallible Preservative.

When you use this Oil-Varnish, 'tis best to warm it, and then with a Brush lay it on as thin as possible; this is best for Arms; but for other Iron-Work, it may be laid on cold; in four or five Days after 'tis laid on, 'twill be thoroughly dry.

Note, That such Arms as are done over with it, may, when they come into Use, be cleansed from it again, by being warmed hot before a Fire; for Heat will dissolve it, but Water will do it no Hurt.

C H A P.

C H A P. XIX.

*The Art of Back-Painting Metzotinto-
Prints, with Oil-Colours.*

THIS Mystery consists chiefly in Pasting the Print upon a Piece of Glass of such a Size as fits the Print. Now to do this, take your Print and lay it in clean Water for two Days and two Nights, or longer, If your Print be on very strong Paper; then take it out, and lay it upon two Sheets of Paper, and cover it with two more, and let it lie there a little to suck out the Moisture: In the mean Time, take the Glass your Print is to be pasted on, and set it near the Fire to warm: then take *Strafburg* Turpentine and put it into a Gall-y-Pot, and warm it upon the Fire; then take a Hog's-Hair-Brush, the Hairs being well fastened by Wedging, as before was shewed, and therewith spread over the Turpentine very smoothly on the Glass: then take the Print from

I between

86 *The Art of PAINTING.*

between the Paper, and lay it upon the Glass, beginning first at one Part, and so rub it down gently, as you go on, till it lie close, and there be no Wind Bladders between; then with your Fingers roll or rub off the Paper from the Back-side of the Print, till you see nothing but the Print left upon the Glass; and when this is done, set it by to dry; and when 'tis dry, varnish it over with some White-Transparent-Varnish, that the Print may be seen through it; and then it is fit for Painting.

You may, instead of soaking your Prints two Days and two Nights, roll them up and boil them for about two Hours in Water, and that will make them as fit for peeling as the other Way, when rubbed with your Fingers; then having prepared your Oil-Colours, as in the preceding Work is directed, grinding them very fine, and tempering them up very stiff, let the Backside of the transparent Print be coloured over with such Colours, as each particular Part does require, letting the Master-Lines of the Print still guide your Pencil; so will each particular Colour lie

fair

fair to the Eye, on the other Side, and look almost as well as a Painted-Piece, if it be done neatly.

Note, That the Shadows of the Print are generally sufficient for the Shadow of every Colour; but if you desire to give a Shadow from your Pencil, then let the Shadows be laid on first, and the other Colours after.

Note also, That, in laying on of Colours in this Kind of Backside-Painting, you need not be curious in laying them on smooth; 'tis not at all requisite here, where the chief Aim is only to have the Colours appear well on the Foreside of the Print; and, therefore. the only Care to be used in this Work, is to lay Colour thick enough, that its Body may strike the Colour of it plainly through the Glass.

Some

*Some Directions for Mixing of Oil-
Colours for divers Purposes, in this
Art of Colouring Prints with Oil-
Colours.*

Colours for Several Faces.

FOR Faces that are accounted fair, take White-Lead, a little Vermilion, and a very small Touch of Lake.

For the Lips, take more of the Vermilion and Lake, than you did for the Face.

For a Brown Face, take burnt Oaker and White.

For a Tawny-Moor, take Cullens-Earth, a little Burnt-Oaker, and a little White.

Colours for Hair.

For a Brown-Hair, mix Umber and a little Black and White.

For a Yellow-Hair, take Stone-Oaker, White-Lead, a little Vermilion.

For a Flaxen-Hair, take White-Lead, Stone-Oaker, and a little Cullens-Earth.

Lines.

The Art of PAINTING. 89

Linen,

Is done with White-Lead or Cerus.

Silver

Is done with White, a little Smalt,
and some White-Masticote.

Gold,

Is done with Red-Orpiment and
White-Masticote, of each an equal
Quantity.

Colours for Garments.

For Blue Garments, the best Smalt
and White-Lead.

For a Grass-Green, mix Verdigrease
and a little Pink-Yellow.

For a Willow-Green, mix Verdigrease
and a very little White.

A Sea-Green is made, by mixing
Green-Verditer, Pink and White-Lead.

A French-Green is made, by mixing
Pink and Indico.

A Carnation, by mixing Lake and
White-Lead.

A Crimson is made, by mixing Ver-
million, Lake and White.

A Scarlet, is only Vermilion laid on
alone.

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90 *The Art of PAINTING.*

A Cherry-Colour is made, by mixing Vermilion and White-Lead.

For a Yellow, lay on either Yellow-Orpiment, or Yellow-Masticote; if your Yellows are more pale, then mix White with the former.

For an Orange-Colour, mix Red Orpiment and a little Vermilion.

For a Purple, mix Smalt, Lake and White.

For a Violet, mix Bice and Lake.

A Straw-Colour is made with White, Yellow-Oaker, and a very little Umber.

An Ash-Colour is made, by mixing Black and White.

A Chesnut-Colour is made, by mixing Umber, Lake and White.

For a Dove-Colour, or the Wings of an Angel, take White, a little Lake, and a little Smalt.

Colours for Trees.

For the Bodies of Trees, take Pink, Yellow, White-Lead, and Yellow Oaker and a little Black.

For the Leaves of them that are near the

The Art of PAINTING. 91

the Eye, take Verdigrease and Pink; or if darker-coloured, then take Indico and Pink.

For Leaves of Trees farther off, take Green-Verditer, Pink, and White Lead.

For them that are farthest of all, take Terrevert and White.

Colours for Grounds behind the Pictures.

Note, That a light Hair requires a dark Ground; and a dark Hair, a light Ground.

Ground-Colours for a Picture with a light Hair, are made with Umber, White and Black.

A Ground-Colour for a dark Hair, is made with Umber and White.

For a Ground in a Landskip.

Take Pink, Oaker, and White, with a little Green-Verditer.

For Country-Houses, at a Distance, take White-Lead, Yellow-Oaker, and Smalt; the same Colour serves also for Houses of Stone.

For Brick-Houses or Walls, take Yel-
E 2 low-

92 *The Art of PAINTING.*

low-Oaker burnt, and White-Lead, if the Work be far off; but if near, then India-Red, and a little White.

For Pales of Wood or other Timber-Work, of what Kind soever, in Country-Cottages, take Umber, White, and a little Oaker.

Sky Colours,

Are made of Smalt and White for the highest Skies, more White for the lower, and Yellow mixt with a little Vermilion for the lowest of all.

C H A P. XX.

*The Manner of Painting Cloth, or
Sarsnet Sash-Windows.*

LE T the Cloth or Sarsnet be first wet in clean Water; and then strained tight to the Frames, and there made fast; and when they be thorough dry, varnish them over with the following Transparent-Varnish, thus made:

Take

Take a Pound of good clear Nut-Oil, put it into an Earthen-Pipkin, and add to it half a Pound of good Silver-Litharge in fine Powder; set it on a small Fire, but not to boil, and let it stand hot, at least twelve Hours, stirring it often in that Time (this adds a drying Quality to the Oil) when it has stood thus long, pour it off from the Litharge by Inclination, then take a Pound and a half of the clearest White-Rosin, beat it to Powder, and mix it with the Oil on a slow Fire, always stirring it till the Rosin be dissolved; then take it off, and put into it a Pound of good clear *Venice-Turpentine*, and stir them all well together; then with a good Brush let your Sashes be thoroughly varnished over with this Mixture, so that they may appear all over clear and transparent.

When this Varnish is dry, then you may paint upon them what Fancy you please, with Oil-Colours; but Landskip is most common and natural, for which Purpose, the Colours you mix, ought to be such as are of a fine Body, and apt to become transparent.

94 *The Art of PAINTING.*

For these Purposes, Lake makes an excellent, transparent Ruby-Colour, and Distilled-Verdigrease makes an incomparable Transparent-Green. Orpiment makes an excellent, transparent Gold-Colour; Umber and Yellow-Oaker will become indifferent transparent, if thinly mixt; but for the rest, there are none that will lie clear in this Work, but only according to the very Thinness of their Mixture with the Oil.

The aforesaid Varnish, as it is clear of itself, is an excellent Varnish for Paper-Windows, being much more transparent than any other Composition, and more lasting; for the Rosin and Turpentine being made tough, when dry, by means of the Oil mixt with it, does more powerfully resist the Injuries of all Weather than Oil alone.

If any are troubled with weak Eyes, and cannot endure a bright Light, this Varnish, mixt with Distilled-Verdigrease, and Paper-Windows, or Sarsnet ones, done over with it, will make an incomparable green Light, very comfortable to the Sight, and of great Benefit to such as love not too much Brightness: a Note

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of good Use, especially to all great Students, whose Sight is often much impaired and weakened by poring too much upon their Books; the Whiteness of the Paper being observed to be often a great Enemy to the Sight of some Men, the Inconveniences of which, such a green Light as this now mentioned, will infallibly prevent, beyond green Reading-Glaſs, Spectacles, or any other Contrivance yet found out. The like Benefit may some Tradesmen also receive from it.

C H A P. XXI.

The whole Art and Mystery of Colouring Maps, and other Prints, in Water-Colours.

HAVING, as yet, seen nothing published upon this Subject, that is Authentick, I have thought fit, for the sake of those that are inclined to Ingenuity, to set forth the Way and Manner of doing this Work, it being an excellent

lent Recreation for those Gentry, and others, who delight in the Knowledge of Maps; which by being coloured, and the several Divisions distinguished one from the other by Colours of different Kinds, do give a better Idea of the Countries they describe, than they can possibly do uncoloured.

Now, to perform this Work after the best Manner, there must be provided in the first Place, a Lye made with Tartar, and a Gum-Water.

To make the Tartar-Lye do thus: Take two Ounces of the best White-Tartar, which is a stony Substance that sticks to the side of the Wine-Vessels, and is sold by the Druggists. Wrap it up hard and tight in half a Sheet of brown Cap-Paper, wet it throughly in Water, and put it into a clear Fire, either of Wood or Sea-Coal; let it remain therein till it be red-hot quite through, then take it out with a Pair of Tongs, and put it immediately into a Pint of Water, and with your Fingers rub it well to Pieces; put it into a long, narrow Glass, and in a Day or two the Black will all settle, and the Lye will become pure clear:

clear: Pour off the Lye into a clean Glasf, and keep it close stopt for Use.

To make Gum-Water, Take three Ounces of the whitest and clearest Gum-Araback; which is also sold at the Druggists, and beat it as small as you can bruise it; then put it into a Pint of fair Spring-Water, and let it dissolve therein, which will be much hastened by shaking the Glass three or four Times a Day very well, that the Gum that is dissolved may mix the better with the Water that is above it: And when it is all dissolved, if there appear any Foulness in it, strain it through a Rag into a clean Earthen-Dish, and put it into a Glass, and stop it up for Use. *Note;* That too much of this ought not to be made at a Time: For, if the Gum be kept dissolved too long in the Water, it will rot, and so be of no Use; therefore observe to make it fresh once in two Months, or three at the farthest.

In the next Place, you must prepare, or make your Colours ready for Use; and the best for this Work are those that follow; Namely,

98. *The Art of PAINTING.*

Copper-Green; and that is made thus: Take a Pound of right *French Verdigrase*, made at *Montpelier*, this being the best; (for the Verdigrase made at any other Place will fade:) To this add three Ounces of Cream of Tartar, beat them both into a fine Powder, and take care, while the Verdigrase is in the pounding, to stop your Nose, and hold a Bunch of fine Linen in your Mouth to breathe through, else the subtile Powder of the Verdigrase will be apt to offend; and when this is done, mix both the Powders in two Quarts of Water, and boil it in an Earthen Pipkin till it boil away a Quart, then strain it out when cold, and put the Liquor into a Glafs, stop it up, and let it stand to settle till the Liquor be very clear; so you will have a delicate Green: But sometimes, the Verdigrase not being always of a Goodness, the Colour may not be deep enough for some Uses. In this Case, put some of it into a broad Earthen-Dish, and set it over a Chafing-Dish of Coals, and by a gentle Heat, diminish so much of the Liquor, till by trying on a Paper, and letting of it dry, the Colour

Colour please you. And here you are to note, That if it shine too much when dry, it is not right; for it is not rightly made, except it but just shine: and if you cannot make the Colour deep enough by evaporating by Heat, the abounding Liquid, without making it shine too much, it were better to add some more Verdigrease, and boil it up a-new, till it become a transparent, deep Willow-Green. If you would make but a Pint of this, you must take but half the Quantities of each. And you are also to take Notice, that this is a Colour that will keep many Years without decaying, if the Glass that contains it be close stopt up.

The next Colour needful to be made, is a Stone-Colour, or a Liquor of Myrrh: which is thus done: Take a Pint of your Tartar-Lye, and add to it an Ounce of the best Myrrh in Powder, which you can get at the Druggists, and boil it till the Myrrh is dissolved, which will be done in a small Time; let it settle and pour off the clear for Use, which you must keep close stopt up. This is also a Tincture which will never

100 *The Art of PAINTING.*

ver decay, and may be made fainter or deeper, by boiling more of the Liquor away to make it deeper, or by adding Water to it to make it fainter.

And in the last Place, there is required a Crimson Colour, which is speedily made thus. Buy at the Druggists some good Cochinele; about half an Ounce will go a great Way. Take thirty or forty Grains, bruise them in a Gally Pot to fine Powder, then put to them as many Drops of the Tartar-Lye as will just wet it, and make it give forth its Colour; and immediately add to it half a Spoonfull of Water, or more, if the Colour be yet too deep, and you will have a delicate Purple-Liquor or Tincture. Then take a Bit of Allom, and with a Knife scrape very finely a very little of it into the Tincture, and this will take away the Purple-Colour, and make it a delicate Crimson. Strain this through a fine Cloth into a clean Gally-Pot, and use it as soon as you can; for this is a Colour that always looks most noble when soon made use of, for it will decay if it stand long.

Indico

The Art of PAINTING. 101

Indico is another Colour used in colouring of Maps. This is bought at the Colour-Shops that sell Paint, and it must be ground very fine on a Stone, as you do Oil-Colours with a little Tartar-Lye, to make it give its Colour, and look the brighter; when 'tis ground perfect fine like a thick Syrup, add Gum-Water to it till it be thin enough for your Purpose, and keep it in a Glass close stopt up; but it will settle so, that when you use it, you must stir it up from the Bottom.

For a Yellow, Gumboge is the best; it is sold at Druggists in Lumps, and the Way to make it fit for Use, is to make a little Hole with a Knife in the Lump, and put into the Hole some Water; stir it well with a Pencil till the Water be either a faint or a deeper Yellow, as your Occasion requires; then pour it into a Gally-Pot, and temper up more, till you have enough for your Purpose.

Red-Lead is also a Colour much used in this Work, and so is Orpiment; both which you may buy at the Colour-Shops very finely ground, so that they need

need only to be tempered with Gum-Water, to be fit for Use.

Blue-Bice is also used often, which needs only to be tempered with Gum-Water; and when Men design to be curious, they may use, instead thereof, Ultramarine, which is the best and most glorious of all Blues, but vastly dear; yet, small Papers of it of about two Shillings Price, may be bought at some Colour-Shops, which if carefully used, will go a great Way: It needs only to be tempered in a very small Gally-Pot with a little Gum-Water, till it lie on the Paper with a good Colour.

There is also an exceeding glorious Red or Crimson-Colour, called Carmine, which is also very dear, yet about half a Crown's Worth will go a great Way in the Uses to which it is put; it needs only to be tempered with Gum-Water, and gives several Degrees of Colour, according as it is thicker or thinner tempered.

Vermilion is also used in some Cases. This is a glorious Scarlet, and needs only to be tempered with Gum-Water, for

for it may be bought very finely ground to Powder at the Colour-Shops; only 'tis to be noted, that this Colour shews much brighter when dry, if glazed over with some thick Gum-Water, made by putting two Ounces of Gum-Arabeck to half a Pint of Water, or less.

And for some Uses, Burnt-Umber, ground very fine with Water as thick as possible, and then tempered up with Gum-Water to a due Thickness, makes a good transparent Colour.

There is another Colour needful in this Work, which is a most pleasant Grass-Green; and that is made thus: Take a Lump of *Gum-Boge*, and make a little Hole in it; then put therein some Copper-Green, stir it about with a Pencil, and from a Willow you will see it turn to a Grafs-Green, which you may make deeper or lighter, as you stir it about a longer or a lesser Time.

Of the Practice of Colouring Maps,

The Colours being prepared as before is directed, you may proceed to colour

avour a Map in this Manner, first take Notice of the several Divisions in a Map, which distinguish one Kingdom from another, or one County from another, which are known by certain Lines, or Rows of Pricks, or Points of several Sizes and Shapes, agreeable to the Divisions they are to denote. As for instance, *Portugal* is distinguished from *Spain* by a Row of large Points, or Pricks, and the Provinces of that Kingdom, or Shires, as we call them in *England*, are distinguished one from another by Lines of lesser Points or Pricks. Now, if you were to colour the Kingdom of *Portugal*, do thus; first with a small Camel-Hair Pencil in a Duck's-Quill, colour over all the Hills within the large prick'd Line that divides it from *Spain*, with the Tincture of Myrrh, very thin; then, if there be any Woods, dab every Tree with the Point of a very fine Pencil dipt in Grass-Green, made of Copper-Green, tempered up with Gumboge; but in dipping your Pencils into any Colour, stroke it against the Sides of the Pot or Glass in which you put it, that the Colour may

may not drop from it and spoil your Work; then, with another Pencil dipt in Red-Lead, tempered thinly with Gum-Water, let the principal Cities and Towns be done over, that the Eye may more readily perceive them. Lastly, with a Duck's-Quill Pencil dipt in Copper-Green, trace out the Bounds of one of the Provinces, keeping the out-most Edge of the Pencil close to the Pricks; and be careful to lay your Colours all alike, and not thick in one place and thin in another, or too deep in some places and too light in others; and when 'tis almost dry, take another clean Pencil of the same Size, and dip it in Water, stroaking the Water out well, and therewith rub upon the Inside of the coloured Line, till it take away most of the Colour on the Edge, and make it grow faint and lose itself by Degrees, and continue so to do till you have gone quite round; then take Yellow made of Gumboge, and go round the Inside of the Pricks that divide the next Province, sweetening over the innermost Side of it, when almost dry, with a Pencil dipt in Water, as
you

you did before, do over the next to that with the Crimson-Tincture, made with Cochinele, and the next do round with Red-Lead, and the next to that with Grafs-Green, and the next to that with any of the former Colours, that will so agree with the Work, that two joining Provinces may not be coloured with the same Colour, for then you could not distinguish them.

And in this Work of Dividing, observe, That when your Boundary-Lines pass through Woods already coloured, or Hills; observe then, I say, to miss those Woods and Hills in your drawing a Colour round the Province; and be careful also not to draw any Colour over the Cities or Towns that are painted Red, for that spoils the Beauty.

And when you have coloured over or divided all the Counties, then colour the Sea-Shoar, and all Lakes of Water, if there be any, with thin Indico, working of that Side of the Colour, which is from the Land, faint, with a wet Pencil, as before was taught; and, if there be any Ships, colour the Water shaded at the Bottom with the same Indico,

Indico, painting the Hull of the Ship with Umber, the Sails with Tincture of Myrrh, and the Flags with Vermilion or Blue-Bice; and if they are represented as firing their Guns, let all the Smoak be done with very thin Bice; and as for the Margent, or square Stick of Degrees, as the Gravers term it, which goes round the Map, let that be coloured either with Yellow, or Red-Lead, or Crimson; none but those three Colours serving well for this Purpose.

As for the Compartment or Title, which consists generally of some neat Device to set the Map off, and make it appear more beautiful, it may be coloured according to the Nature of it. As for Instance, Crowns or any Thing representing Gold, with Yellow, shadowed in the darkest Parts of the Graving with Orpiment; the Hair of Men or Women, with Tincture of Myrrh, or if black, with half Water half common Ink, or with Burnt-Umber; the Flesh of Women or Boys, with a very little of the Tincture of Cochinele, in a large Quantity of Water; and Garments, either with thin Green, shadowed with thicker

thicker and with the Tincture of Co-chinele made thin with Water, and shaded with the same Colour thicker, and thin Bice, and shadowed with a thicker Mixture of the same, or with Vermilion shaded with Carmine. In general observe, That the thinner the Colour is laid in the lightest Part of all Garments, and the deeper in the Shades, the more beautiful it appears; for the thick of the same Colour is the most natural Shades for most Colours, except Yellow and Blue; for Blue sometimes requires to be shaded in the darkest Places with a Black, or at least with thick Indico; and Yellow requires Red-Lead or Crimson, and sometimes it appears very pleasing when shaded with Green.

If you are to paint Clouds, do them sometimes with Tincture of Myrrh; and in some Cases, with a very thin Crimson; and for Variety, you may do some with thin Ivory-Black, ground very fine, and tempered up with much Gum-Water. Smoak is best represented with very thin Blue-Bice, and if you are to colour any Representation

The Art of PAINTING. 109

presentation of Sea-Waves, do it with Indico.

If you are to colour any Representations of Land, do the lightest Parts over with very thin Yellow, that represents a Straw-Colour, shading it with Orpiment; and in other Parts, do it with light Green, and shade it with a deeper Green. Rocks must be done with Tincture of Myrrh, and the Trees, some with Copper-Green, some with dark Grass-Green, and some with thin Umber. Houses may be done with Red-Lead, and the Tiles with Vermilion, or with Bice, to represent Blue-Slate. Castles may be done with Tincture of Myrrh in some Parts, in others, with thin Red-Lead; and the Spires and Pinnacles, with Blue.

But, when all is said that can be said, the only Way to colour Maps well, is by a Pattern done by some good Workman, of which the *Dutch* are esteemed the best. Three or four such Maps coloured by a good Artist, are sufficient to guide a Man in the right doing of his Work: But, if he cannot obtain this, he may by a few Trials grow a good Artist

110 *The Art of PAINTING.*

Artist in a short Time; for this is only attained to by Practice, and if a Man does spoil half a Score Maps, in order to get the Knack of colouring a Map well at last, there's no Man that is ingenious will grumble at it.

The Art of Colouring well may be attained to by Practice, as was said; but the hardest Thing is, to know rightly how to make and prepare the Colours, which here is taught faithfully: And if your Paper be good, and bear the Colours well, without suffering them to sink into it, all that are here mentioned will lie fair and pleasant to the Eye; and 'tis the Fairness of the Colours that is most esteemed in this Art of Map-Painting: But if the Paper be not good and strong, no Art can make the Colours lie well; therefore in buying Maps, chuse those that are printed on the strongest or thickest Paper.



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